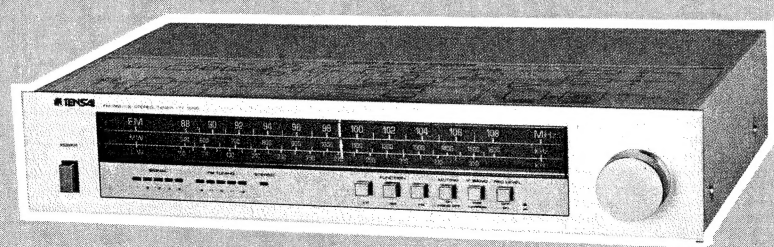
Service Manual

MODEL TT3255/TM2260

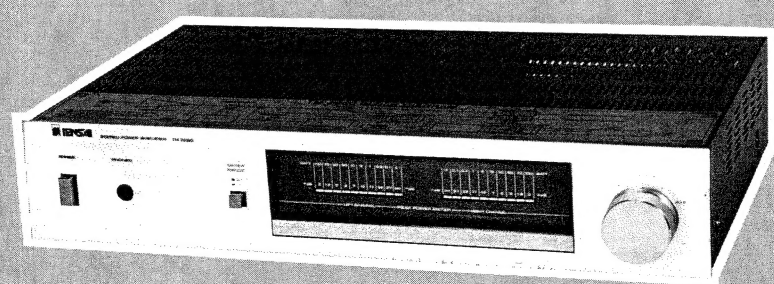
TUNER/POWER AMPLIFIER

TENSAI
INTERNATIONAL

STEREO TUNER TT3255



STEREO POWER AMPLIFIER TM2260



CONTENTS

Specifications are subjects to change without notice.

MODEL TT3255
1. SPECIFICATIONS

FM PERFORMANCE

Frequency Range . . . . . 88 – 108 MHz
IHF Sensitivity at 98 MHz. 1.9μV
Image Rejection at 106 MHz . . . . . 50 dB
IF Rejection at 90 MHz . . . . . 95 dB
Spurious Response at 98 MHz . . . . . 80 dB
Bandwidth 1.0% THD, 1100μV at 98 MHz, 75 kHz dev.
  Wide Position . . . . . 250 kHz
  Narrow Position . . . . . 200 kHz
S/N at 1100μV, at 98 MHz . . . . . 70 dB
Fidelity ±1 dB, 1100μV at 98 MHz. . . 20 – 15,000 Hz
Output Level at 1100μV 98 MHz,
  75 kHz dev. (Fixed). 1V
Selectivity 100μV, ±300 kHz
  Wide Position . . . . . 40 dB
  Narrow Position . . . . . 55 dB
Muting Level 20μV
Stereo Separation at 1100μV 98 MHz
  100 Hz . . . . . 40 dB
  1,000 Hz . . . . . 40 dB
  10,000 Hz . . . . . 35 dB
Stereo THD, 1100μV at 98 MHz
  100 Hz 0.3%
  1,000 Hz 0.3%
  10,000 Hz 4.0%

AM PERFORMANCE

Frequency Range
  MW. . . . . 531 – 1620 kHz
  LW. . . . . 150 – 350 kHz
Sensitivity for 20 dB S/N
  MW at 1000 kHz. 500μV/m
  LW at 240 kHz 600μV/m
Image Rejection
  MW at 1400 kHz. . . . . 40 dB
  LW at 320 kHz . . . . . 40 dB
IF Rejection
  MW at 600 kHz. . . . . 32 dB
  LW at 320 kHz . . . . . 28 dB
Spurious Response at 1000 kHz . . . . . 50 dB
Bandwidth at 1000 kHz
  –6 dB . . . . . 7 kHz
  –40 dB . . . . . 22 kHz
ACA ±10 kHz at 1400 kHz . . . . . 35 dB
AGC at 100 mV/m, 1000 kHz . . . . . 50 dB
S/N
  MW at 1000 kHz, 5 mV/m . . . . . 40 dB
  LW at 240 kHz, 10 mV/m. . . . . 40 dB
Fidelity –6 dB at 5 mV/m . . . . . 30 – 2,500 Hz
Output Level at 5 mV/m 1000 kHz,
  80% Modulation 1.3V

GENERAL

Power Source . . . . . AC 220 to 240 Volts 50 Hz ∿
Dimensions . . . . . 430(W) x 80(H) x 250(D) mm
Weight. . . . . 5 kg

2. DISASSEMBLY INSTRUCTIONS

(1) Top cover removal
Remove four screws on both sides of the set and lift up the top cover.

(2) Bottom cover removal
Remove two screws around the center of the bottom cover lift up the cover.

(3) Front panel removal
Remove a tuning knob.
Remove five screws (A) from top and bottom as shown in Figure 1 and 2, and the front panel can be removed with push buttons.

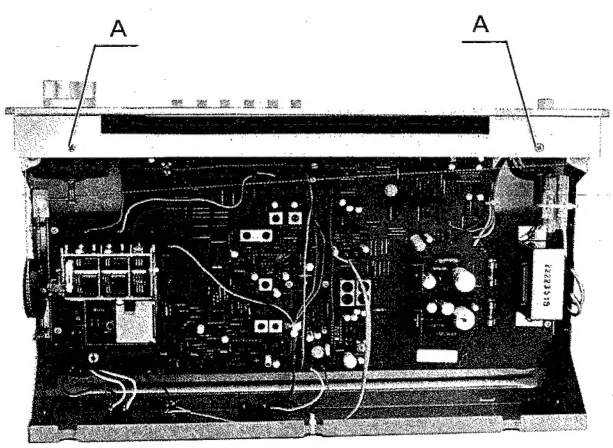


Figure 1

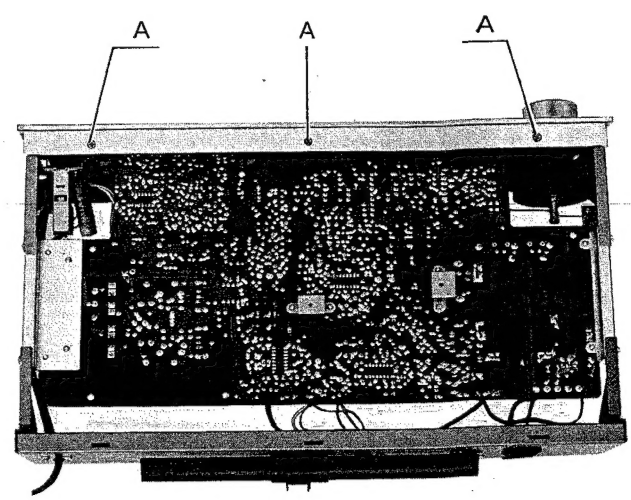


Figure 2

3. DIAL CORD STRINGING

(1) Set the tuning capacitor to the maximum capacitance (fully counterclockwise position).
(2) Wind the dial cord in the numerical sequence as shown in Figure 3.

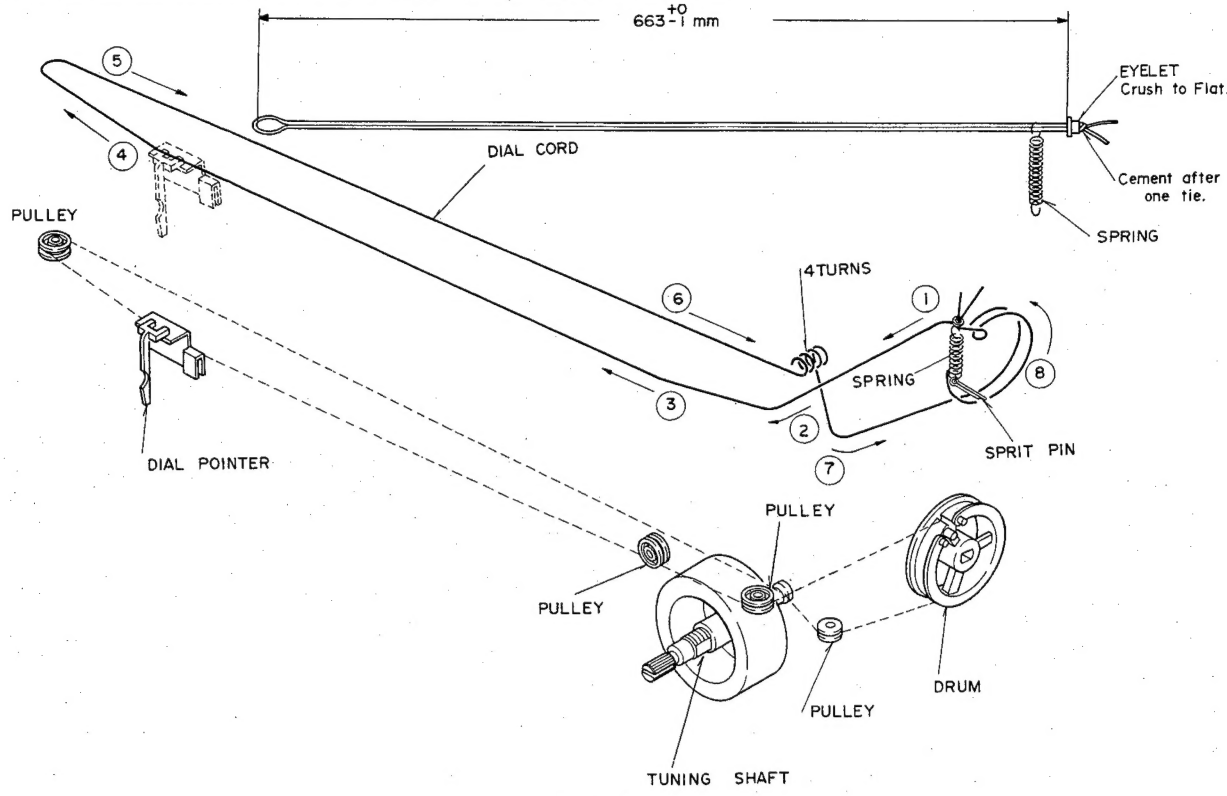


Figure 3

4. ALIGNMENT INSTRUCTIONS

AM ALIGNMENT

TEST EQUIPMENTS

(1) Signal generator with a frequency range of at least from 145 kHz to 2.6 MHz for AM.
(2) VTVM.
(3) Test loop.

NOTES:

(1) During alignment, keep the signal generator output at the lowest level where the set is sensible of signal.
(2) Ground connection of signal generator ... to chassis ground.
(3) "Tuning gang fully clockwise" means minimum capacitance position.

MW ALIGNMENT

(1) Connect test equipements as shown in Figure 4.
(2) Push the MW button.
(3) Generator modulation ... 400 Hz 30%.
(4) Proceed as outlined in the TABLE 1. MW ALIGNMENT CHART.

TABLE 1. MW ALIGNMENT CHART (For alignment points, see Figure 5.)

Item	Step	Signal Generator Frequency	Dial Settting	Meter Connection	Adjusting Point	Adjusting Level
IF	1	470 kHz	Tuning gang fully clockwise	Output terminal L ch or R ch	IFT203 IFT204	Adjust for maximum

Osc. Freq.	2	510 kHz	Tuning gang fully counter-clockwise	Same as step 1	L103	Same as step 1
	3	1650 kHz	Tuning gang fully clockwise	Same as step 1	TC103	Same as step 1
	4	Repeat steps 2 and 3 as required.				
RF Track-ing	5	600 kHz	Tune to signal	Same as step 1	L102-a (MW)	Same as step 1
	6	1400 kHz	Tune to signal	Same as step 1	TC101	Same as step 1
	7	Repeat steps 5 and 6 as required.				

LW ALIGNMENT

(1) Connect test equipments as shown in Figure 4.
(2) Push the LW button.
(3) Generator modulation ... 400 Hz 30%.
(4) Proceed as outlined in the TABLE 2. LW ALIGNMENT CHART.

TABLE 2. LW ALIGNMENT CHART (For alignment points, see Figure 5.)

Item	Step	Signal Generator Frequency	Dial Setting	Meter or Connection	Adjusting Point	Adjusting Level
Osc. Freq.	1	145 kHz	Tuning gang fully counter-clockwise	Ouput terminal L ch or R ch	L104	Adjust for maximum.
	2	370 kHz	Tuning gang fully clockwise	Same as step 1	TC104	Same as step 1.
	3	Repeat steps 1 and 2 as required.				
RF Track-ing	4	170 kHz	Tune to signal	Same as step 1	L102-b (LW)	Same as step 1.
	5	340 kHz	Tune to signal	Same as step 1	TC102	Same as step 1.
	6	Repeat steps 4 and 5 as required.				

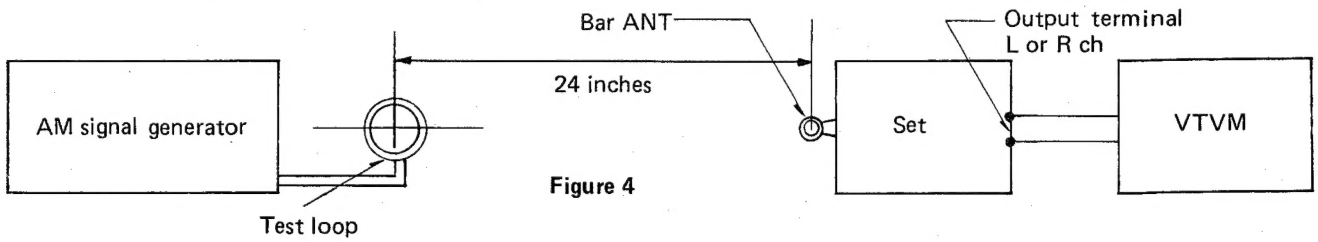


Figure 4

ALIGNMENT POINTS

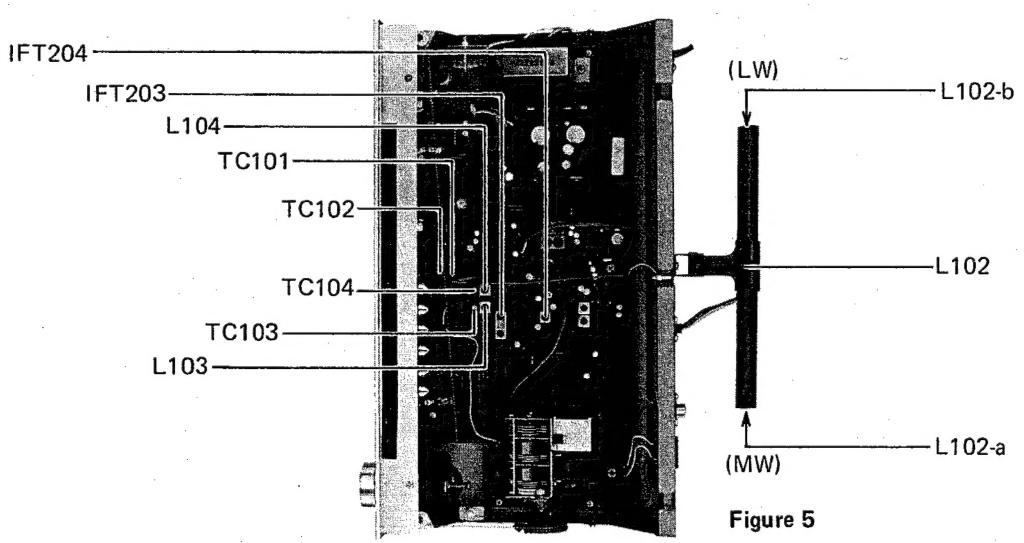


Figure 5

FM ALIGNMENT

TEST EQUIPMENTS

(1) Signal generator with a frequency range of at least 85 MHz to 150 MHz (FM).
(2) Distortion meter.
(3) Oscilloscope.
(4) VTVM.
(5) Center meter.
(6) FM dummy antenna (300 ohm).

ALIGNMENT

(1) Connect test equipments as shown in Figure 6.
(2) Push the FM button.
(3) Set the MUTING switch to OFF (▂).
(4) Generator modulation .. 1 kHz (75 kHz dev.)
(5) Proceed as outlined in the TABLE 3. FM ALIGNMENT CHART.

TABLE 3. FM ALIGNMENT CHART (For alignment points, see Figure 9.)

Item	Step	Signal Generator	Dial Setting	Adjusting Point	Adjusting Level
IF	1	No signal output	———	IFT201	Center on the center meter
	2	98 MHz (1mV)	Tune to signal	IFT202	Adjust for minimum distortion
	3	Repeat steps 1 and 2 as required.			
Tuning Ind.	4	98 MHz (1mV)	Tune to signal	SVR401	Adjust for −100mV ±20mV on VTVM (DC)
Rec. Level	5	98 MHz (1mV)	Tune to signal	SVR203	Adjust the indication on VTVM (AC) when REC LEVEL switch is "ON", should be a half level (−6dB) compared with indication when REC LEVEL switch is "OFF".
Osc. Freq.	6	87.2 MHz (10μV)	Tuning gang fully counterclockwise	Lo on Block-FM	Adjust for maximum indication.
	7	108.4 MHz (10μV)	Tuning gang fully clockwise	TCo on Block-FM	Same as step 6
	8	Repeat steps 6 and 7 as required			
RF Track-ing	9	90 MHz (2μV)	Tune to signal	La, Lr	Same as step 6
	10	106 MHz (2μV)	Tune to signal	TCa, TCr on Block-FM	Same as step 6
	11	Repeat steps 9 and 10 as required.			

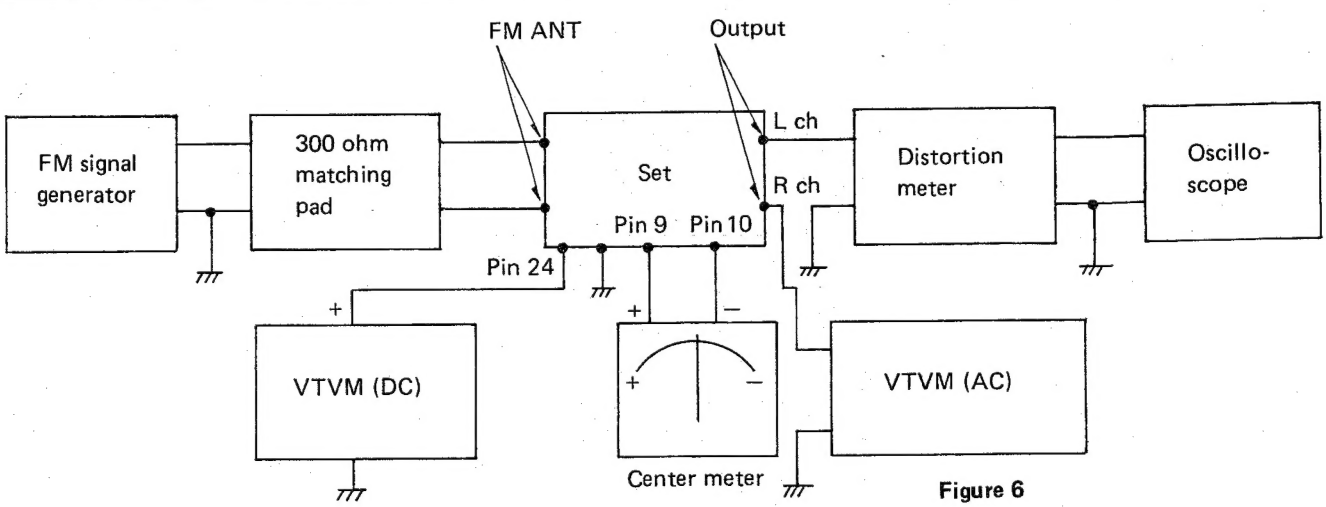


Figure 6

FM STEREO ALIGNMENT

TEST EQUIPMENTS

(1) FM signal generator
(2) FM stereo modulator
(3) VTVM
(4) Oscilloscope
(5) Frequency counter
(6) FM matching pad

NOTE:

(1) Set the deviation meter by the signal of L = R and switch mode desired.

ALIGNMENT

(1) Connect the equipments as shown in Figure 7 or Figure 8.
(2) Set the MUTING switch to ON (■).
(3) RF signal input should be about 60 dB (1mV).
(4) Set the turning gang to a quiet point on dial.
(5) Proceed as outlined in the TABLE 4. FM STEREO ALIGNMENT CHART.

TABLE 4. FM STEREO ALIGNMENT CHART (For alignment points, see Figure 9.)

Item	Step	Modulation Frequency	Modulation Mode Setting	Modulation Level Setting	Adjusting Point	Adjusting Level etc.	Connection
VCO Adj.	1	———	———	0%	SVR201 slightly	76.0 ±0.076 kHz	Figure 7
Sep. Adj.	2	1000 Hz	Stereo Rch with pilot	90% (Main & Sub) (67.5 kHz dev.) 10% (Pilot) (7.5 kHz dev.)	SVR202 (slightly separation)	Adjust for minimum.	Figure 8

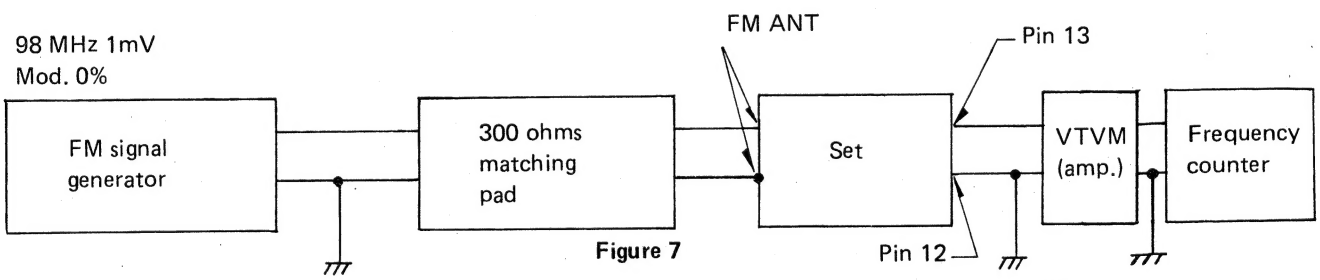


Figure 7

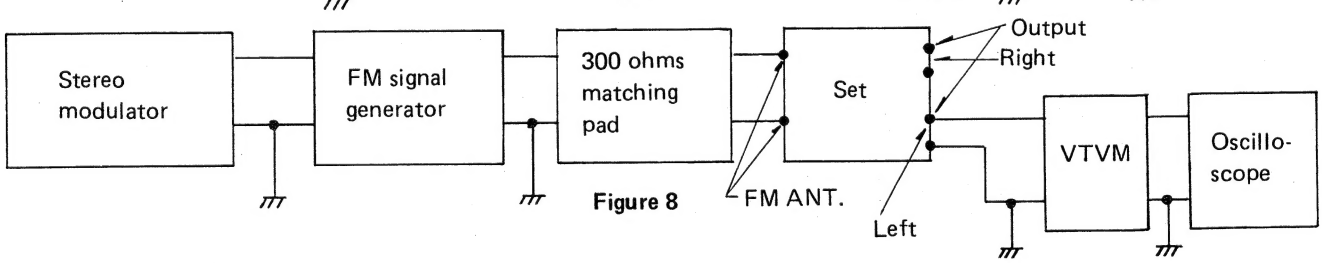


Figure 8

ALIGNMENT POINTS

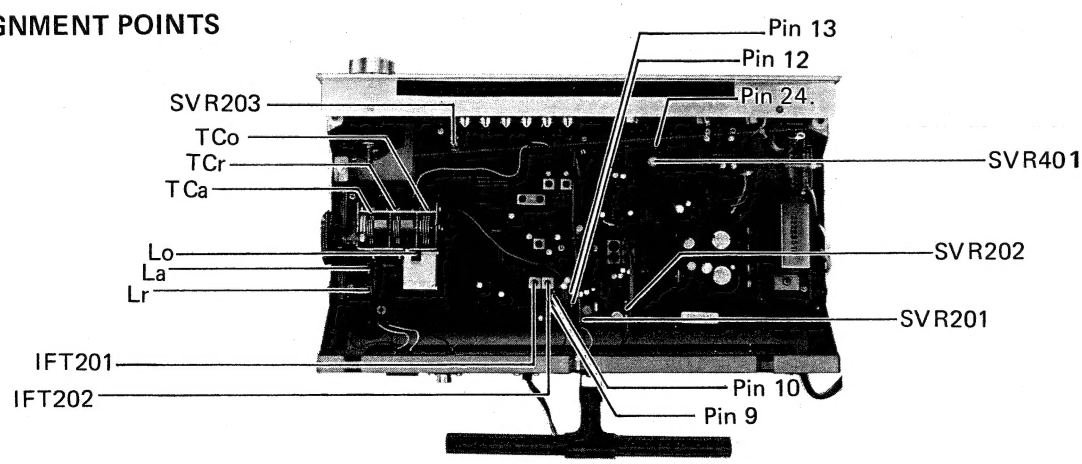
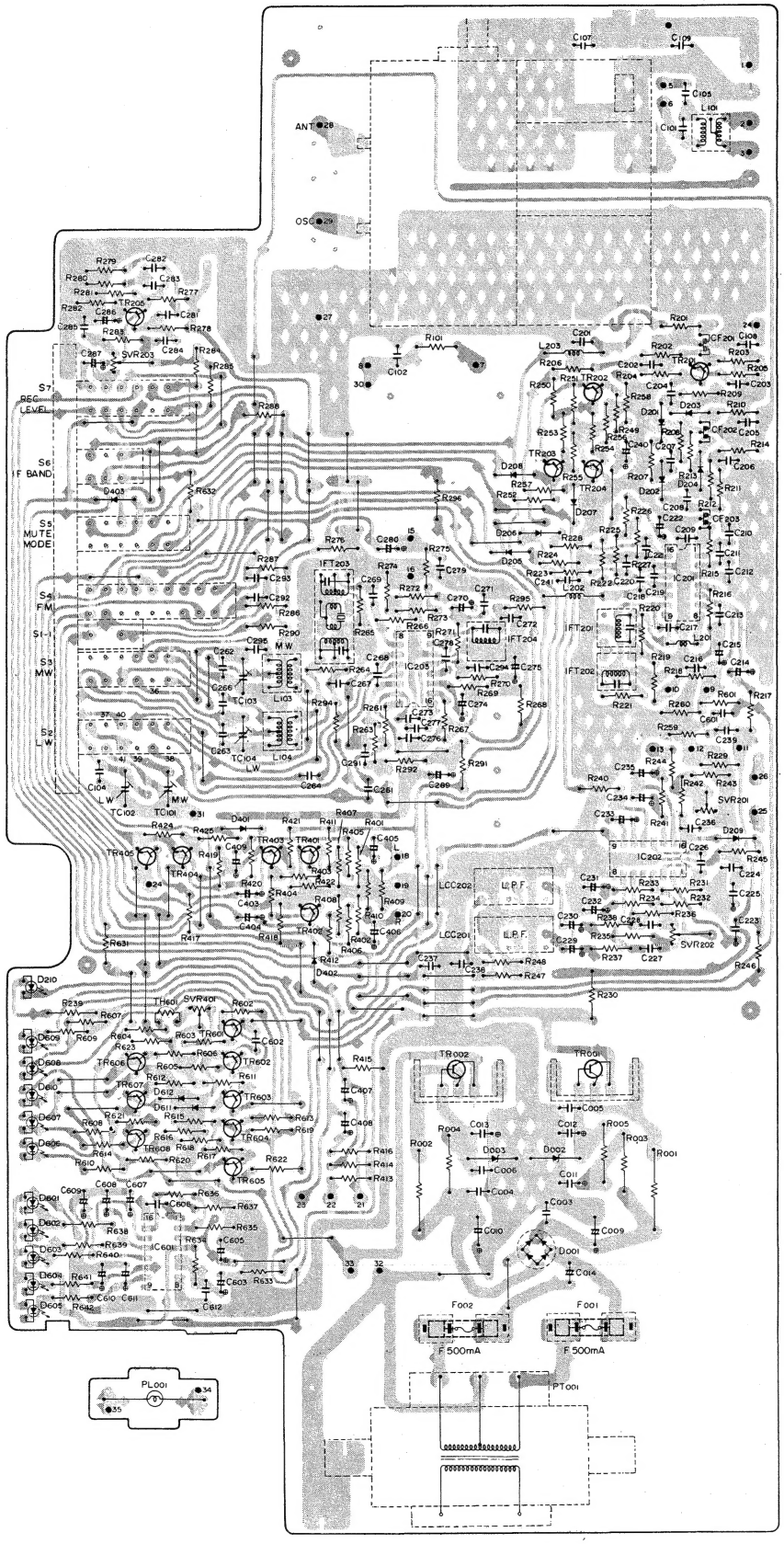


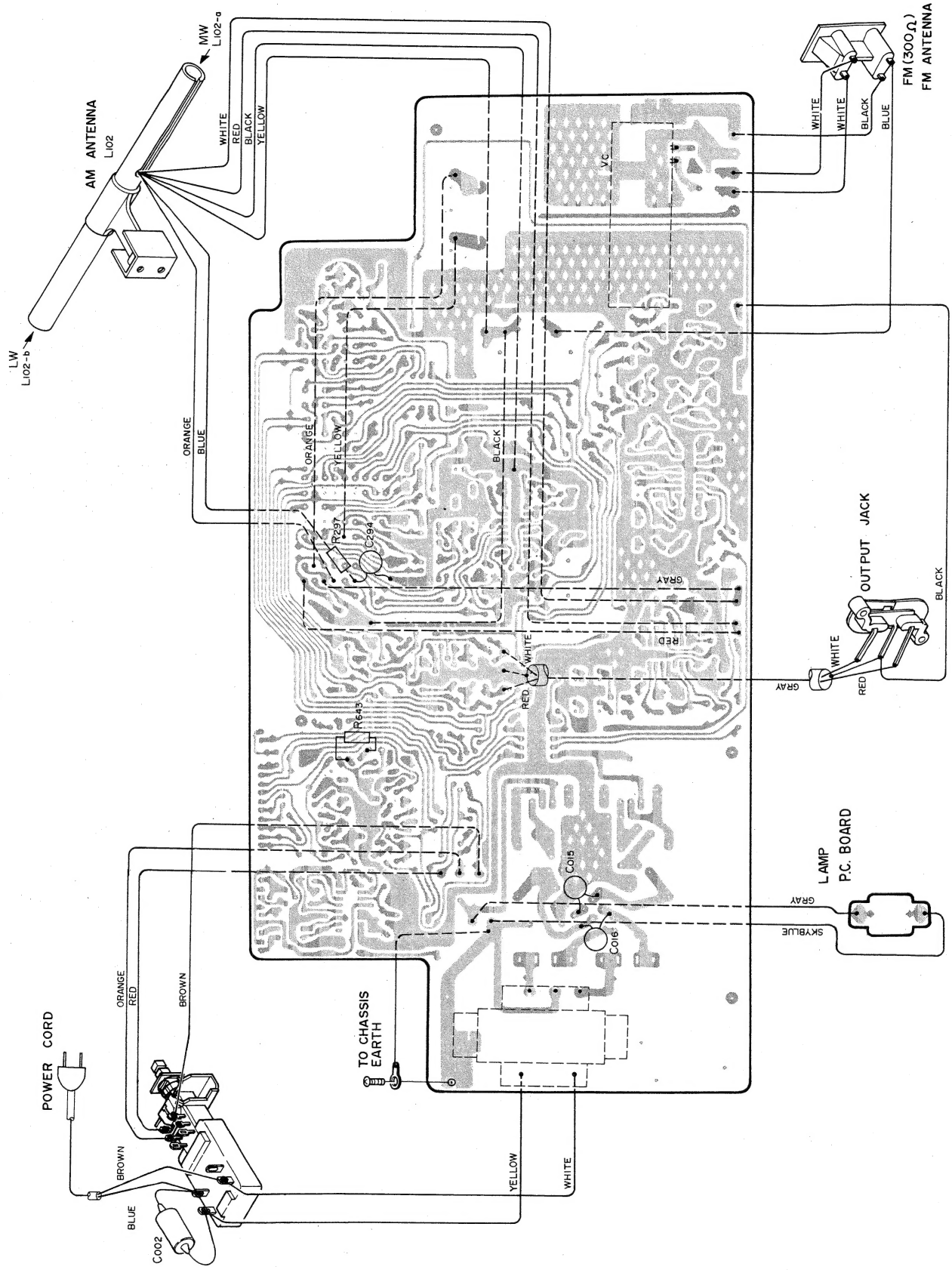
Figure 9

5. PRINTED CIRCUIT BOARDS

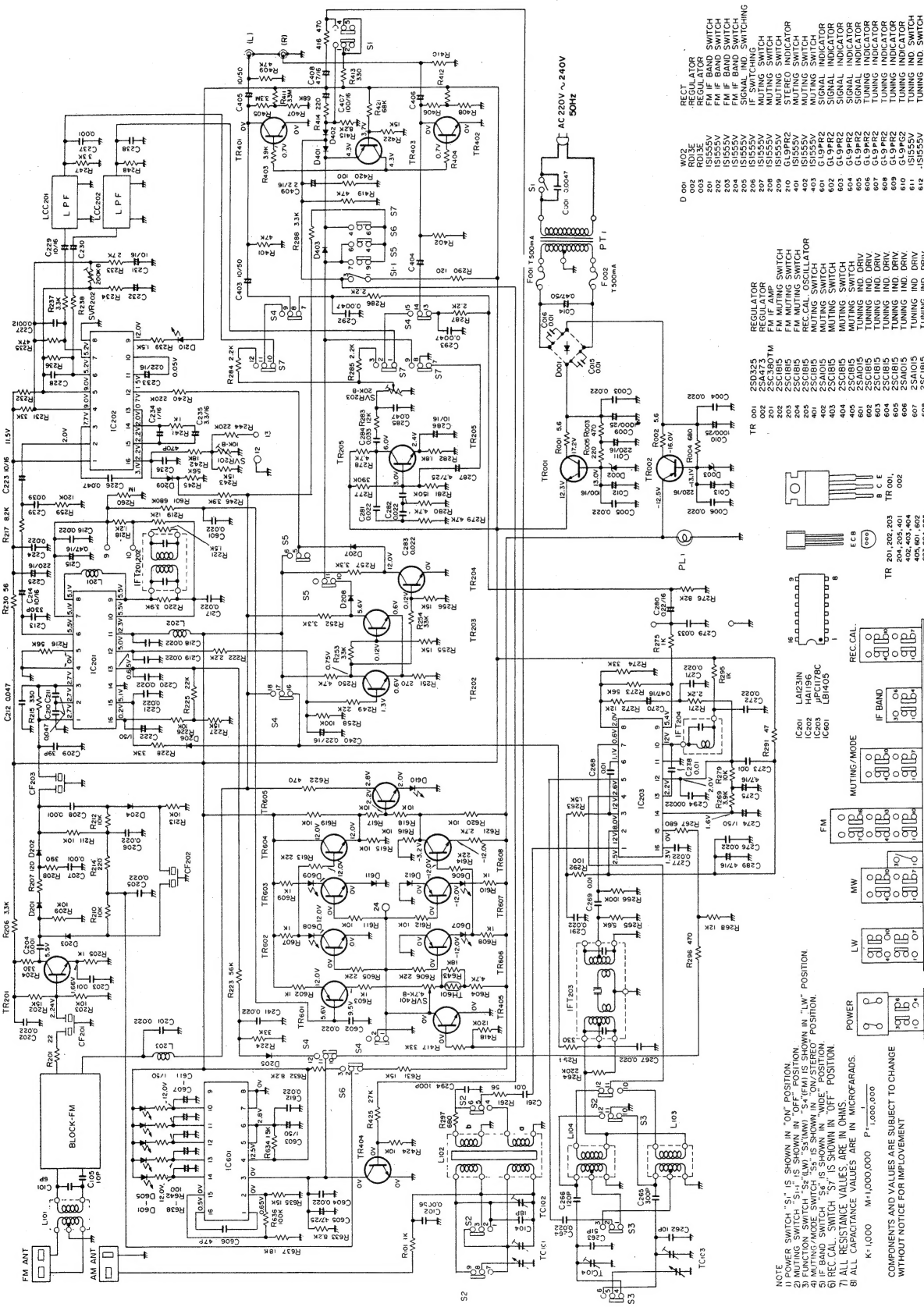
BOTTOM VIEW



BOTTOM VIEW OF P.C.B. AND WIRING

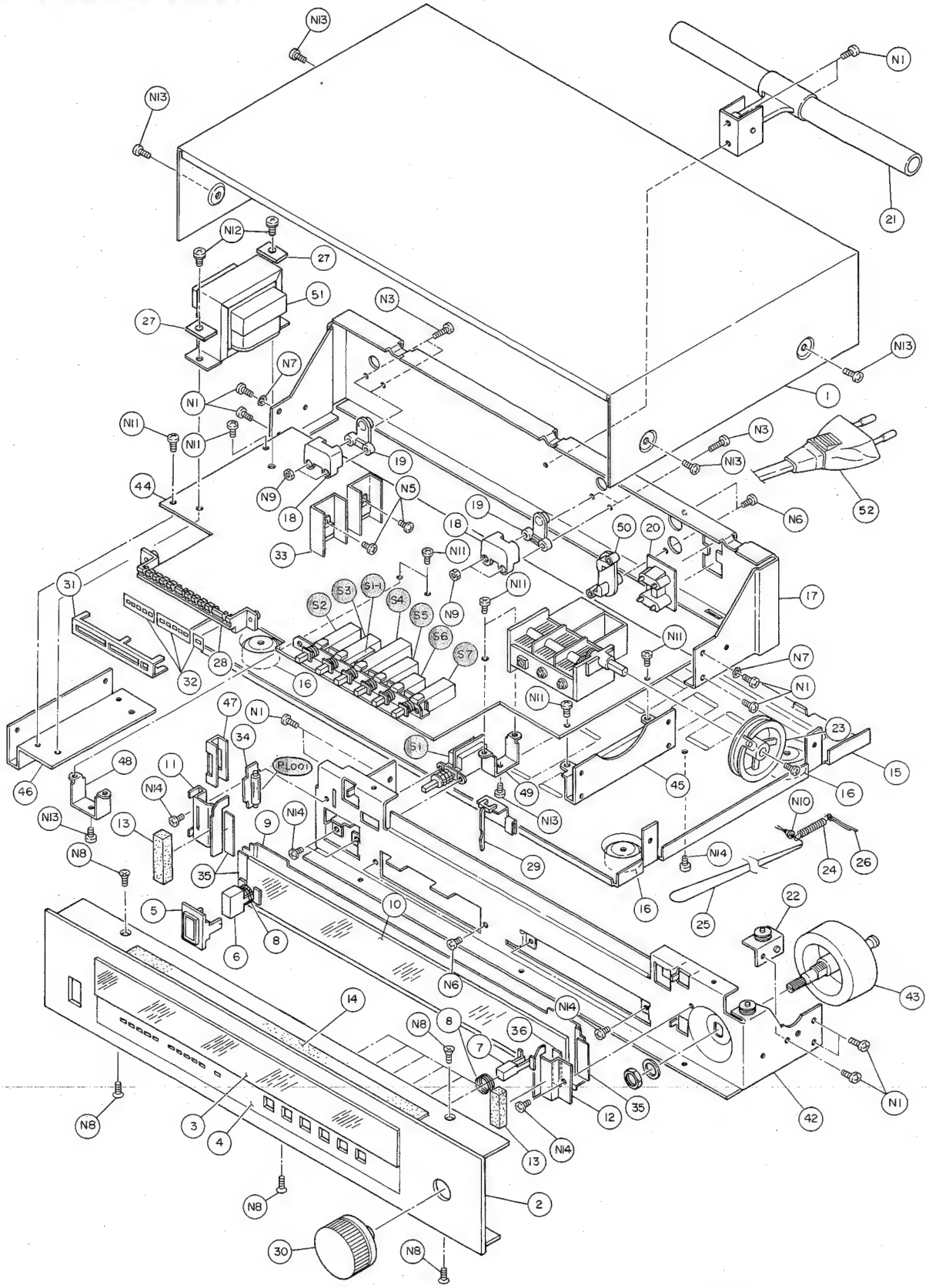


6. SCHEMATIC DIAGRAM



7. EXPLODED VIEW AND PARTS LISTS

EXPLODED VIEW



The parts marked ⬤, see the electrical parts list.

PARTS LIST

ELECTRICAL PARTS

Symbol No.	Part No.	Description
		ICs
IC201	22114700	IC, LA1231
IC202	22114586	IC, HA1196
IC203	22114726	IC, μPC1178C
IC601	22114769	IC, LB1405
		TRANSISTORS & DIODES
TR001	22114478	Transistor, 2SD325-E
TR002	36500740	Transistor, 2SA473-Y
TR201	36707940	Transistor, 2SC380TM-0
TR202	36317460	Transistor, 2SC1815-GR
TR203	36317460	Transistor, 2SC1815-GR
TR204	36317460	Transistor, 2SC1815-GR
TR205	36317460	Transistor, 2SC1815-GR
TR401	36317480	Transistor, 2SC1815-BL
TR402	36534060	Transistor, 2SA1015-GR
TR403	36317480	Transistor, 2SC1815-BL
TR404	36317480	Transistor, 2SC1815-BL
TR405	36317480	Transistor, 2SC1815-BL
TR601	36534060	Transistor, 2SA1015-GR
TR602	36317460	Transistor, 2SC1815-GR
TR603	36317460	Transistor, 2SC1815-GR
TR604	36317460	Transistor, 2SC1815-GR
TR605	36317480	Transistor, 2SC1815-BL
TR606	36534060	Transistor, 2SA1015-GR
TR607	36534060	Transistor, 2SA1015-GR
TR608	36317460	Transistor, 2SC1815-GR
D001	22115251	Diode, W02
D002	22115574	Diode, RD13E-B3-M
D003	22115574	Diode, RD13E-B3-M
D201	37246703	Diode, 1S1555V
D202	37246703	Diode, 1S1555V
D203	37246703	Diode, 1S1555V
D204	37246703	Diode, 1S1555V
D205	37246703	Diode, 1S1555V
D206	37246703	Diode, 1S1555V
D207	37246703	Diode, 1S1555V
D208	37246703	Diode, 1S1555V
D209	37246703	Diode, 1S1555V
D210	22115469	Diode, GL-9PR2
D401	37246703	Diode, 1S1555V
D402	37246703	Diode, 1S1555V
D403	37246503	Diode, 1S1555V
D601	22115469	Diode, GL-9PR2
D602	22115469	Diode, GL-9PR2
D603	22115469	Diode, GL-9PR2
D604	22115469	Diode, GL-9PR2
D605	22115469	Diode, GL-9PR2
D606	22115469	Diode, GL-9PR2
D607	22115469	Diode, GL-9PR2
D608	22115469	Diode, GL-9PR2
D609	22115469	Diode, GL-9PR2
D610	22115552	Diode, GL-9PG2
D611	37246703	Diode, 1S1555V
D612	37246703	Diode, 1S1555V
		COILS & TRANSFORMERS
L101	22294396	RF Coil, FM
L102	22242775	Antenna Coil Assembly
L103	22245357	OSC Coil, MW
L104	22205060	OSC Coil, LW
L201	22211229	Choke Coil, AF
L202	22211229	Choke Coil, AF
L203	22241041	Choke Coil, FM
LCC201	22232228	MPX Filter
LCC202	22232228	MPX Filter
IFT201	22266335	IF Transformer, FM
IFT202	22266336	IF Transformer, FM
IFT203	22264805	IF Transformer, AM
IFT204	22266334	IF Transformer, AM
		CAPACITORS
		Tolerance: D: ±0.5PF, J: ±5%, K: ±10%, M: ±20%, P: +100 to −0%, Z:+80 to −20%,
C001	22303026	Oil-Filled 0.0047 mfd/450WV
C002	Not Used	
C003	22342223	Ceramic 0.022 mfd, Z
C004	22342223	Ceramic 0.022 mfd, Z
C005	22342223	Ceramic 0.022 mfd, Z
C006	22342223	Ceramic 0.022 mfd, Z
C009	22446102	Electrolytic 1000 mfd/25WV
C010	22446102	Electrolytic 1000 mfd/25WV
C011	22445221	Electrolytic 220 mfd/16WV
C012	22445101	Electrolytc 100 mfd/16WV
C013	22445221	Electrolytic 220 mfd/16WV
C014	22403085	Electrolytic 0.47 mfd/50WV
C015	22342103	Ceramic 0.01 mfd, Z
C016	22342103	Ceramic 0.01 mfd, Z
C101	22361609	Ceramic 6 PF, D
C102	22371562	Mylar 0.0056 mfd, J
C103	Not used	
C104	22361130	Ceramic 13 PF, J
C105	22361100	Ceramic 10 PF, D
C106	22343222	Ceramic 0.0022 mfd, M

Symbol No.	Part No.	Description
C107	22343222	Ceramic 0.0022 mfd, M
C108	22343102	Ceramic 0.001 mfd, M
C201	22342223	Ceramic 0.022 mfd, Z
C202	22342223	Ceramic 0.022 mfd, Z
C203	22342103	Ceramic 0.01 mfd, Z
C204	22343102	Ceramic 0.001 mfd, M
C205	22342223	Ceramic 0.022 mfd, Z
C206	22342223	Ceramic 0.022 mfd, Z
C207	22343102	Ceramic 0.001 mfd, M
C208	22343102	Ceramic 0.001 mfd, M
C209	22361390	Ceramic 39 PF, J
C210	22342473	Ceramic 0.047 mfd, Z
C211	22342473	Ceramic 0.047 mfd, Z
C212	22342473	Ceramic 0.047 mfd, Z
C213	22361331	Ceramic 330 PF, J
C214	22445100	Electrolytic 10 mfd/16WV
C215	22440305	Electrolytic 0.47 mfd/50WV
C216	22342223	Ceramic 0.022 mfd, Z
C217	22342223	Ceramic 0.022 mfd, Z
C218	22342223	Ceramic 0.022 mfd, Z
C219	22342223	Ceramic 0.022 mfd, Z
C220	22342223	Ceramic 0.022 mfd, Z
C221	22342223	Ceramic 0.022 mfd, Z
C222	22448109	Electrolytic 1 mfd/50WV
C223	22445100	Electrolytic 10 mfd/16WV
C224	22342223	Ceramic 0.022 mfd, Z
C225	22445221	Electrolytic 220 mfd/16WV
C226	22371473	Mylar 0.047 mfd, J
C227	22371122	Mylar 0.0012 mfd, J
C228	22371122	Mylar 0.0012 mfd, J
C229	22440325	Electrolytic 10 mfd/16WV
C230	22440325	Electrolytic 10 mfd/16WV
C231	22445100	Electrolytic 10 mfd/16WV
C232	22445100	Electrolytic 10 mfd/16WV
C233	22402051	Aluminum 0.22 mfd, K
C234	22402054	Aluminum 1 mfd/16WV
C235	22402056	Aluminum 3.3 mfd/16WV
C236	22391471	Polypropylene 470 PF, J
C237	22371102	Mylar 0.001 mfd, J
C238	22371102	Mylar 0.001 mfd, J
C239	22371393	Mylar 0.039 mfd, J
C240	22440343	Electrolytic 0.22 mfd/50WV
C241	22342223	Ceramic 0.022 mfd, Z
C261	22342103	Ceramic 0.01 mfd, Z
C262	22360487	Ceramic 51 PF, J
C263	22360480	Ceramic 10 PF, D
C264	22371223	Mylar 0.022 Mfd, J
C265	22360482	Ceramic 120 PF, J
C266	22360483	Ceramic 300 PF, J
C267	22342223	Ceramic 0.022 mfd, Z
C268	22342103	Ceramic 0.01 mfd, Z
C269	22342103	Ceramic 0.01 mfd, Z
C270	22440305	Electrolytic 0.47 mfd/50WV
C271	22371223	Mylar 0.022 mfd, J

Symbol No.	Part No.	Description
C272	22342223	Ceramic 0.022 mfd, Z
C273	22343103	Ceramic 0.01 mfd, Z
C274	22448109	Electrolytic 1 mfd/50WV
C275	22446479	Electrolytic 4.7 mfd/25WV
C276	22342223	Ceramic 0.022 mfd, Z
C277	22342223	Ceramic 0.022 mfd, Z
C278	22342103	Ceramic 0.01 mfd, Z
C279	22371333	Mylar 0.033 mfd, J
C280	22440343	Electrolytic 0.22 mfd/50WV
C281	22371223	Mylar 0.022 mfd, J
C282	22371223	Mylar 0.022 mfd, J
C283	22371223	Mylar 0.022 mfd, J
C284	22371333	Mylar 0.033 mfd, J
C285	22371473	Mylar 0.047 mfd, J
C286	22445100	Electrolytic 10 mfd/16WV
C287	22446479	Electrolytic 4.7 mfd/25WV
C288	Not used	
C289	22445470	Electrolytic 47 mfd/16WV
C290	Not used	
C291	22342223	Ceramic 0.022 mfd, Z
C292	22343472	Ceramic 0.0047 mfd, M
C293	22343472	Ceramic 0.0047 mfd, M
C294	22361101	Ceramic 100 PF, K
C403	22440325	Electrolytic 10 mfd/16WV
C404	22440325	Electrolytic 10 mfd/16WV
C405	22440325	Electrolytic 10 mfd/16WV
C406	22440325	Electrolytic 10 mfd/16WV
C407	22445101	Electrolytic 100 mfd/16WV
C408	22446479	Electrolytic 4.7 mfd/25WV
C409	22440306	Electrolytic 2.2 mfd/50WV
C601	22342223	Ceramic 0.022 mfd, Z
C602	22342223	Ceramic 0.022 mfd, Z
C603	22448109	Electrolytic 1 mfd/50WV
C604	Not used	
C605	22446479	Electrolytic 4.7 mfd/25WV
C606	22361470	Ceramic 47 PF, J
C607	22448109	Electrolytic 1 mfd/50WV
C608	22448109	Electrolytic 1 mfd/50WV
C609	22448109	Electrolytic 1 mfd/50WV
C610	22448109	Electrolytic 1 mfd/50WV
C611	22448109	Electorlytic 1 mfd/50WV
C612	22342223	Ceramic 0.022 mfd, Z
TC101	22309104	Trimmer
TC102	22309104	Trimmer
TC103	22309104	Trimmer
TC104	22309104	Trimmer

Symbol No.	Part No.	Description
	RESISTORS	
	All fixed resistors are 1/8W, ±5%, carbon resistor unless otherwise noted.	
	Tolerance: J: ±5%, K: ±10%	
R001	22573569	Metal oxide 5.6 ohm, 2W
R002	22573569	Metal Oxide 5.6 ohm, 2W
R003	22571471	Metal Oxide 470 ohm, 1W
R004	22571681	Metal Oxide 680 ohm, 1W
R005	22571221	Metal Oxide 220 ohm, 1W
R101	22543102	1K ohm
R201	22543220	22 ohm
R202	22543153	15K ohm
R203	22543103	10K ohm
R204	22543331	330 ohm
R205	22543102	1K ohm
R206	22543332	3.3K ohm
R207	22543121	120 ohm
R208	22543391	390 ohm
R209	22543103	10K ohm
R210	22543103	10K ohm
R211	22543103	10K ohm
R212	22543103	10K ohm
R213	22543103	10K ohm
R214	22543221	220 ohm
R215	22543331	330 ohm
R216	22543563	56K ohm
R217	22543822	8.2K ohm
R218	22543122	1.2K ohm
R219	22543123	12K ohm
R220	22543392	3.9K ohm
R221	22543152	1.5K ohm
R222	22543222	2.2K ohm
R223	22543563	56K ohm
R224	22543333	33K ohm
R225	22543223	22K ohm
R226	22543103	10K ohm
R227	22543153	15K ohm
R228	22543333	33K ohm
R229	Not used	
R230	22500200	Fusible 56 ohm, ¼W, J
R231	22543333	33K ohm
R232	22543333	33K ohm
R233	22543272	2.7K ohm
R234	22543272	2.7K ohm
R235	22543473	47K ohm
R236	22543473	47K ohm
R237	22543332	3.3K ohm
R238	22543332	3.3K ohm
R239	22543152	1.5K ohm, ¼W (J)
R240	22543224	220K ohm
R241	22543102	1K ohm
R242	22543183	18K ohm
R243	22543153	15K ohm
R244	22543224	220K ohm
R245	22543562	5.6K ohm

Symbol No.	Part No.	Description
R246	22543392	3.9K ohm
R247	22543332	3.3K ohm
R248	22543332	3.3K ohm
R249	22543223	22K ohm
R250	22543472	4.7K ohm
R251	22543271	270K ohm
R252	22543332	3.3K ohm
R253	22543333	33K ohm
R254	22543333	33K ohm
R255	22543153	15K ohm
R256	22543153	15K ohm
R257	22543332	3.3K ohm
R258	22543104	100K ohm
R259	22543124	120K ohm
R260	22543105	1M ohm
R261	22543560	56 ohm
R262	Not used	
R263	22543152	1.5K ohm
R264	22543224	220K ohm
R265	22543562	5.6K ohm
R266	22543104	100K ohm
R267	22543561	680 ohm
R268	22543123	12K ohm
R269	22543392	3.9K ohm
R270	22543103	10K ohm
R271	22543222	2.2K ohm
R272	22543123	12K ohm
R273	22543563	56K ohm
R274	22543333	33K ohm
R275	22543102	1K ohm
R276	22543823	82K ohm
R277	22543394	390K ohm
R278	22543472	4.7K ohm
R279	22543472	4.7K ohm
R280	22543472	4.7K ohm
R281	22543154	150K ohm
R282	22543182	1.8K ohm
R283	22543123	12K ohm
R284	22543222	2.2K ohm
R285	22543222	2.2K ohm
R286	22543222	2.2K ohm
R287	22543222	2.2K ohm
R288	22543332	3.3K ohm
R289	Not used	
R290	22543121	120 ohm
R291	22500246	Fusible 46 ohm, ¼W, J
R292	22543101	100 ohm
R293	Not used	
R294	22543331	330 ohm
R295	22543102	1K ohm
R296	22543471	470 ohm
R297	22543681	680 ohm
R401	22543473	47K ohm
R402	22543473	47K ohm

Symbol No.	Part No.	Description
R403	22543392	3.9K ohm
R404	22543392	3.9K ohm
R405	22543335	3.3M ohm
R406	22543335	3.3M ohm
R407	22543683	68K ohm
R408	22543683	68K ohm
R409	22543473	47K ohm
R410	22543473	47K ohm
R411	22543335	3.3M ohm
R412	22543335	3.3M ohm
R413	22543331	330 ohm
R414	22543221	220 ohm
R415	22543822	8.2K ohm
R416	22543471	470 ohm
R417	22543333	33K ohm
R418	22543124	120K ohm
R419	22543473	47K ohm
R420	22543101	100 ohm
R421	22543683	68K ohm
R422	22543153	15K ohm
R423	Not used	
R424	22543103	10K ohm
R425	22543273	27K ohm
R601	22543684	680K ohm
R602	22543102	1K ohm
R603	22543102	1K ohm
R604	22543472	4.7K ohm
R605	22543223	22K ohm
R606	22543223	22K ohm
R607	22543102	1K ohm
R608	22543102	1K ohm
R609	22543102	1K ohm
R610	22543102	1K ohm
R611	22543103	10K ohm
R612	22543103	10K ohm
R613	22543223	22K ohm
R614	22543223	22K ohm
R615	22543103	10K ohm
R616	22543103	10K ohm
R617	22543103	10K ohm
R618	22543103	10K ohm
R619	22543103	10K ohm
R620	22543103	10K ohm
R621	22543272	2.7K ohm
R622	22543471	470 ohm, ¼W J
R631	22543153	15K ohm
R632	22543822	8.2K ohm
R633	22543822	8.2K ohm
R634	22543152	1.5K ohm
R635	22543123	12K ohm
R636	22543104	100K ohm
R637	22543183	18K ohm
R638	22543101	100 ohm
R639	22543101	100 ohm

Symbol No.	Part No.	Description
R640	22543101	100 ohm
R641	22543101	100 ohm
R642	22543101	100 ohm
R643	22553183	18K ohm
SVR201	22658470	Semi-Fixed 200K ohm
SVR202	22658514	Semi-Fixed 10K ohm
SVR203	22658455	Semi-Fixed 20K ohm
SVR601	22658444	Semi-Fixed 4.7K ohm

MISCELLANEOUS

CF201	22153068	Ceramic Filter
CF202	22153068	Ceramic Filter
CF203	22153068	Ceramic Filter
F001	22144192	Fuse, 0.5A.T
F002	22144192	Fuse, 0.5A.T
	22165047	Fuse Holding Terminal
S1	22140632	Push Switch (Power)
S2∿S7	22140610	Push Switch (FUNCTION, MUTING/MODE, IF BAND, REC. CAL.)
TH601	22691081	Thermister (TH-112132-45311)
PT1	22223518	Power Transformer
	22176529	Power Cord
	22131222	Block-FM
PL001	22113473	Pilot Lamp 0.2A/12V

EXPLODED VIEW PARTS

Symbol No.	Part No.	Description
1	20848607	Top Cover
2	20713852	Front Panel
3	20848601	Dial Cover
4	20779938	Name Plate
5	20743973	Button Guide
6	20874668	Push Button
7	20874667	Push Button
8	22772611	Spring
9	22837842	Dial Back
10	22837841	Dial Plate
11	20747626	Light Support
12	20747627	Dial Support
13	22756840	Cushion
14	22756528	Cushion
15	22832822	Bottom Cover
16	20842649	Foot
17	20015838	Back Chassis
18	22754791	Cord Calmper
19	22184183	Cord Clamper
20	22167634	DIN2P Socket Assembly
21	22242775	Antenna Coil Assembly (L102)
22	20746992	Pulley Support
23	20042715	Drum
24	22771618	Pull Spring
25	22745502	Dial String
26	54301010	Sprit Pin
27	20791809	Special Washer
28	20746991	LED Support
29	20041664	Pointer Assembly
30	20872620	Tuning Knob
31	20743976	LED Guide
32	20773899	LED Spacer
33	22848794	Radiator
34	22193153	Lamp P.C. Board
35	22756533	Cushion
36	22756976	Cushion
37	Not Used	
38	Not Used	
39	Not Used	
40	Not Used	
41	Not Used	
42	20015796	Chassis
43	20042700	Tuning Shaft
44	22193152	Radio P.C. Board
45	20735693	Bracket
46	20735698	Power Transformer Bracket
47	22748853	Barrier
48	20746994	P.C. Board Support
49	20746995	P.C. Board Support
50	22163765	Jack, US2P
51	22223518	Power Transformer PT1
52	22176529	Power Cord

Symbol No.	Part No.	Description
SCREWS & RINGS		
N1	70433006	Bind Head 3.0 x 6mm
N2	Not Used	
N3	22701716	Bind Head 3.0 x 14mm
N4	Not Used	
N5	72633008	Bind Head Tapping 3.0 x 8mm
N6	22701724	Bind Head Tapping 3.0 x 10mm
N7	74022030	Lock Washer 3.0ϕ
N8	70443006	Flat Head Screw 3.0 x 6mm
N9	73653000	Nut 3.0
N10	75820352	Eyelet 2.0ϕ x 2mm
N11	22701586	Pan Head 3.0 x 8mm with W/SW
N12	22701711	Pan Head 4.0 x 8mm with W/SW
N13	20795986	Bind Head 3.0x8mm with SW
N14	20795955	Bind Head 3.0x6mm with SW
ACCESSORIES		
	22124266	FM Antenna
	22953950	Owner's Manual
	22951862	Warranty Card

MODEL TM2260
1. SPECIFICATIONS

Power Output	50 watts per channel at 4 ohms from 20 to 20000 Hz, both channel driven 0.08% T.H.D.
Damping Factor at 1 kHz 4 ohms	30
Frequency Response (–1.5 dB)	5 Hz to 60 kHz
Signal to Noise Ratio (I.H.F-A)	110 dB
Power Supply	AC 220/240 Volts 50 Hz
Dimensions	430(W) x 80(H) x 250(D) mm
Weight	7.5 kg

NOTE:
According to the power supply voltage, select the position of fuses.

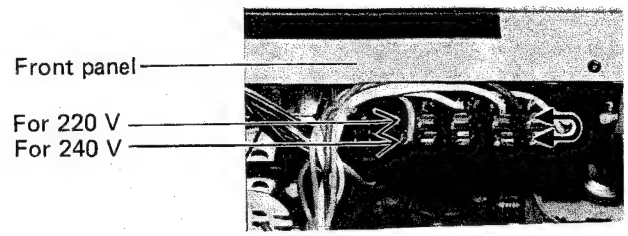


Figure 1

2. DISASSEMBLY INSTRUCTIONS

(1) Top cover removal
Remove four screws on the both sides of the set and lift up the top cover.

(2) Bottom cover removal
Remove a screw on the center of the bottom cover and lift the bottom cover.

(3) Front panel removal
Remove a speaker selector knob.
Remove six screws (A) from top and bottom as shown in Figure 2 and 3, and the front panel with push buttons can be removed.

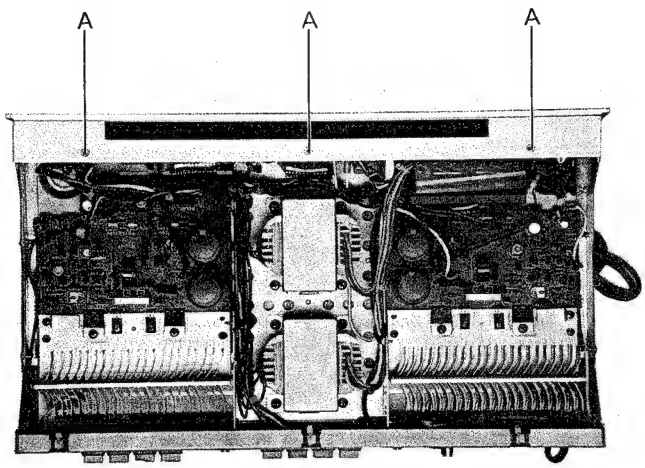


Figure 2

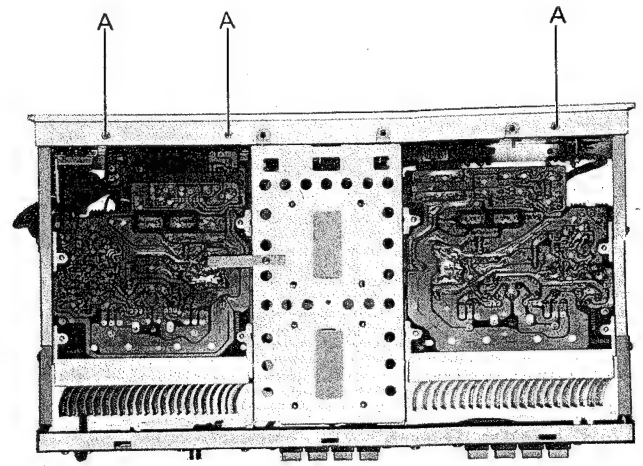
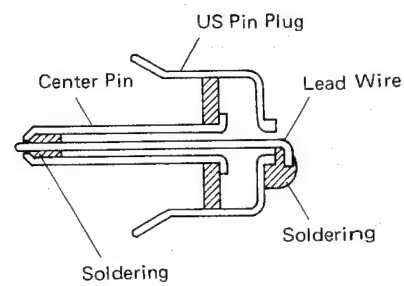


Figure 3

3. ALIGNMENT INSTRUCTIONS
IDLE CURRENT
TEST EQUIPMENTS
(1) VTVM (DC).
(2) Short pin plugs (Accessoires of pre-amplifier or Figure).

NOTE:
(1) Align after five minutes when power has been supplied.

ALIGNMENT (For alignment point, See Figure 6.)
(1) Connect test equipments as shown in Figure 5.
(2) Short the input terminal with short pin plugs.
(3) Adjust the SVR 501 (L ch), and SVR 502 (R ch) as the VTVM indicates 13.2mV DC.



SHORT PIN PLUG

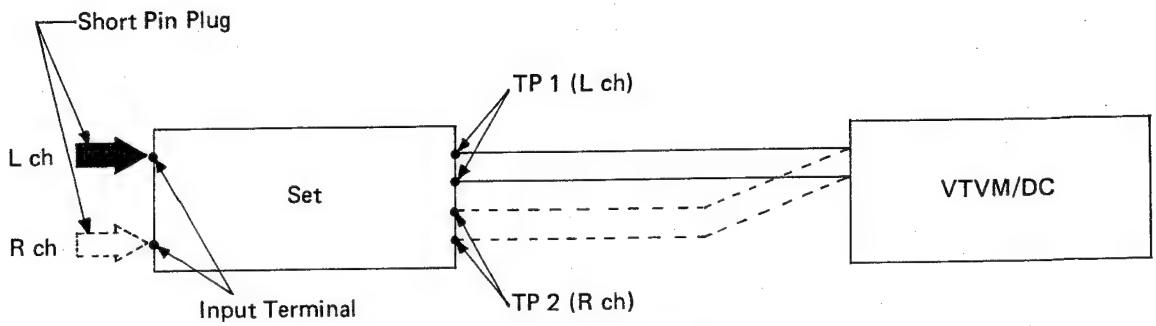


Figure 4

INDICATION

TEST EQUIPMENT

(1) AF oscillator.
(2) VTVM (AC).
(3) Dummy loads (4 ohms above 200W)

NOTE:

(1) Don't short the speaker terminals.

ALIGNMENT (For alignment point, See Figure 6.)

(1) Set the meter range selector of peak-power-indicator to x 0.1 (■) position.
(2) Set the speaker selector knob to SPEAKER A position.
(3) Connect test equipment as shown in Figure 5.
(4) Control the output of AF oscillator as the VTVM indicates 4.47V AC.
(5) Adjust the indication of peak-power-indicator to be 0 db(5W) with SVR701 (L ch) and SVR702 (R ch) .

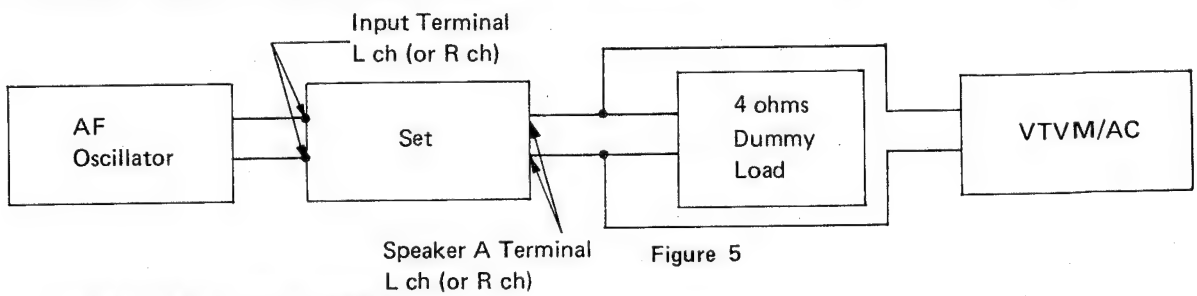


Figure 5

ALIGNMENT POINTS

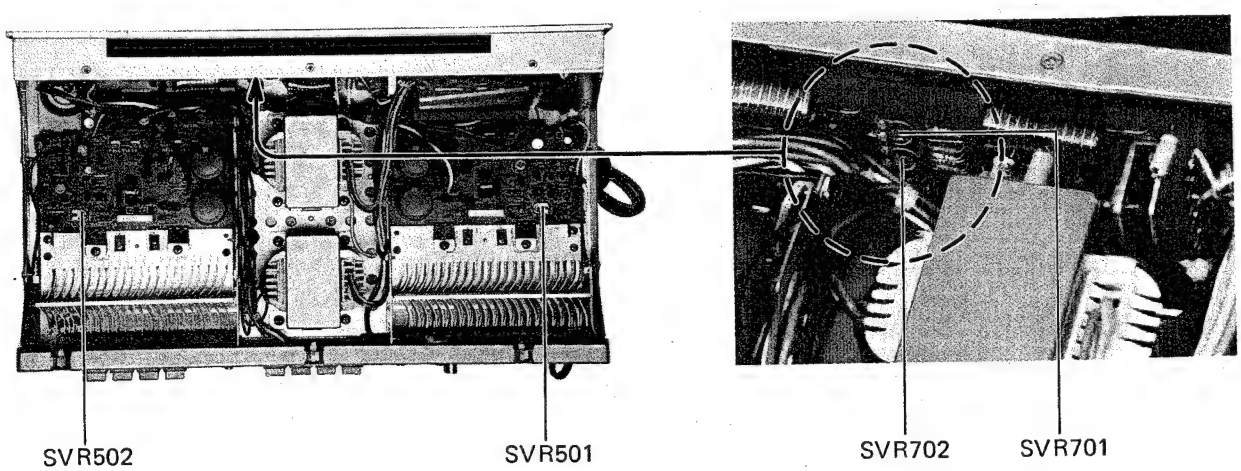
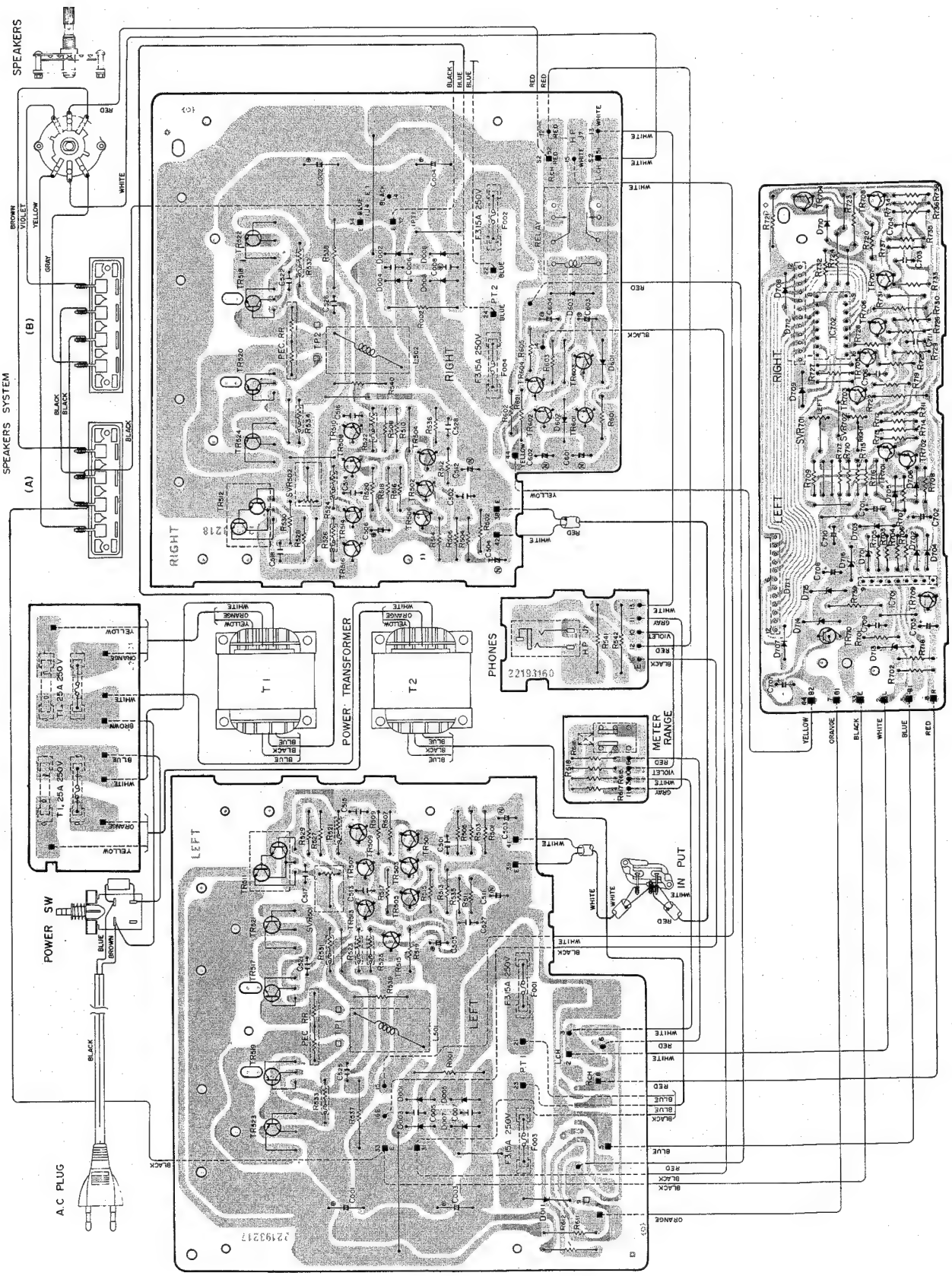


Figure 6

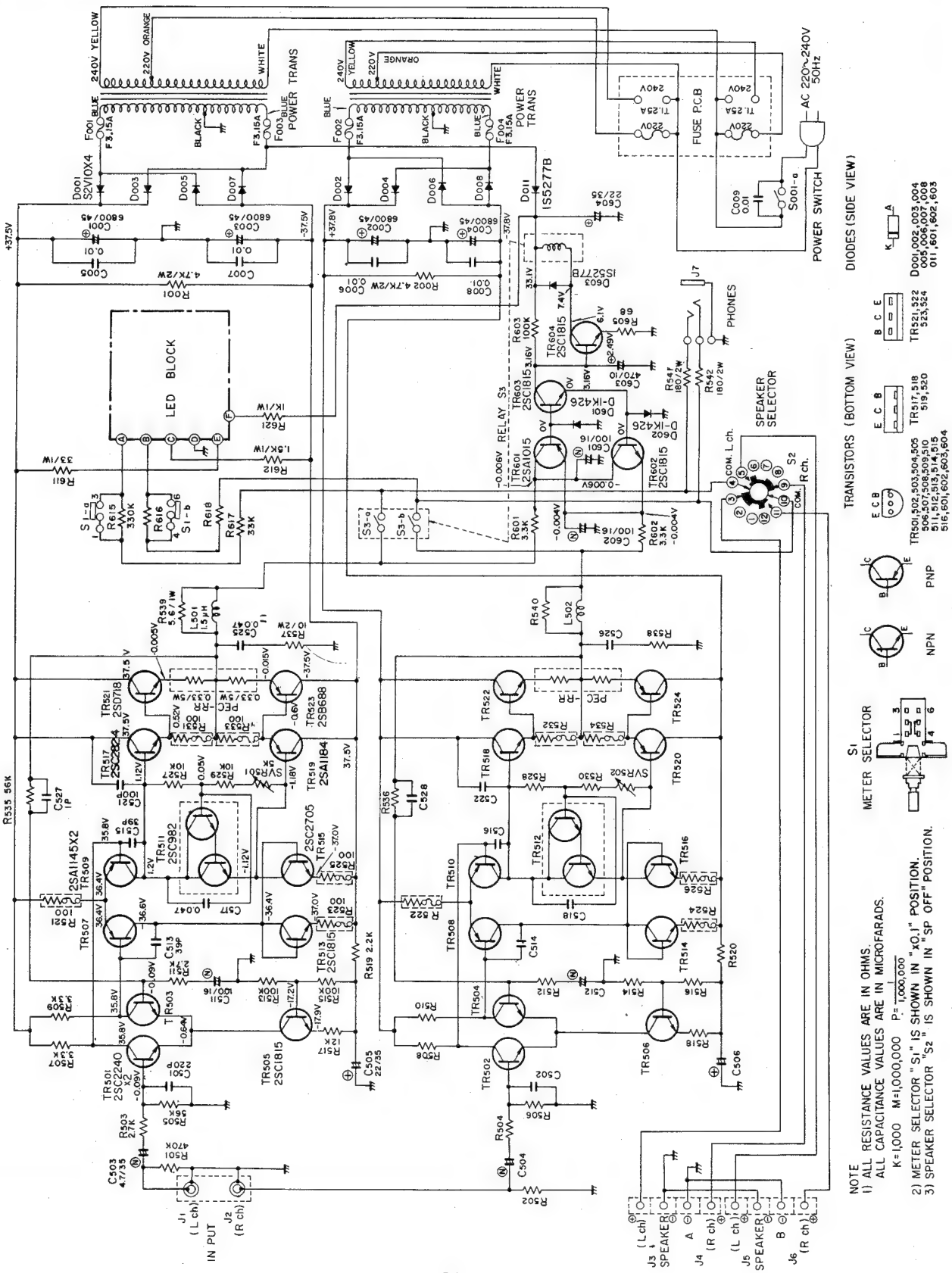
4. PRINTED CIRCUIT BOARDS

BOTTOM VIEW AND WIRING

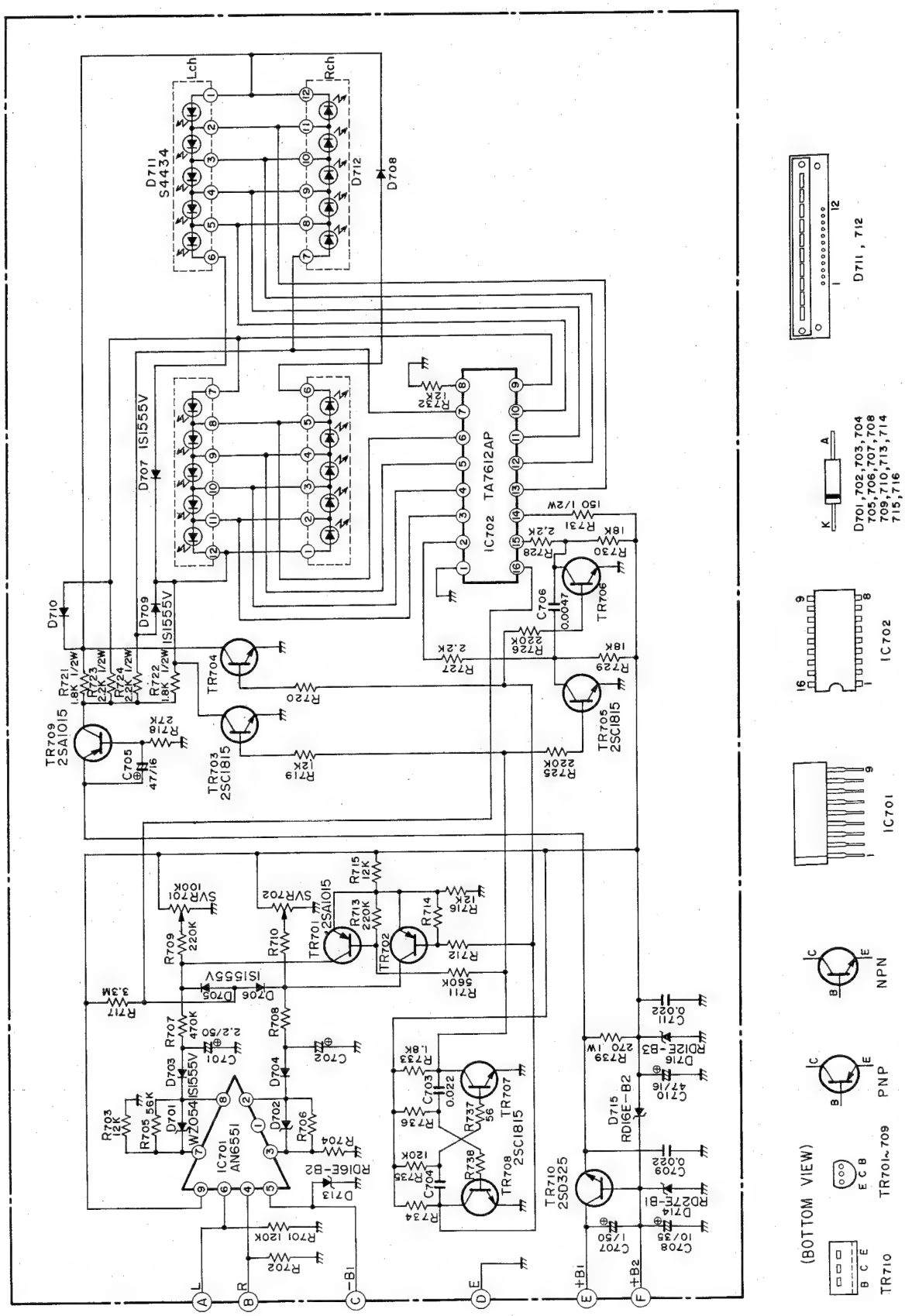


5. SCHEMATIC DIAGRAM

AF BLOCK

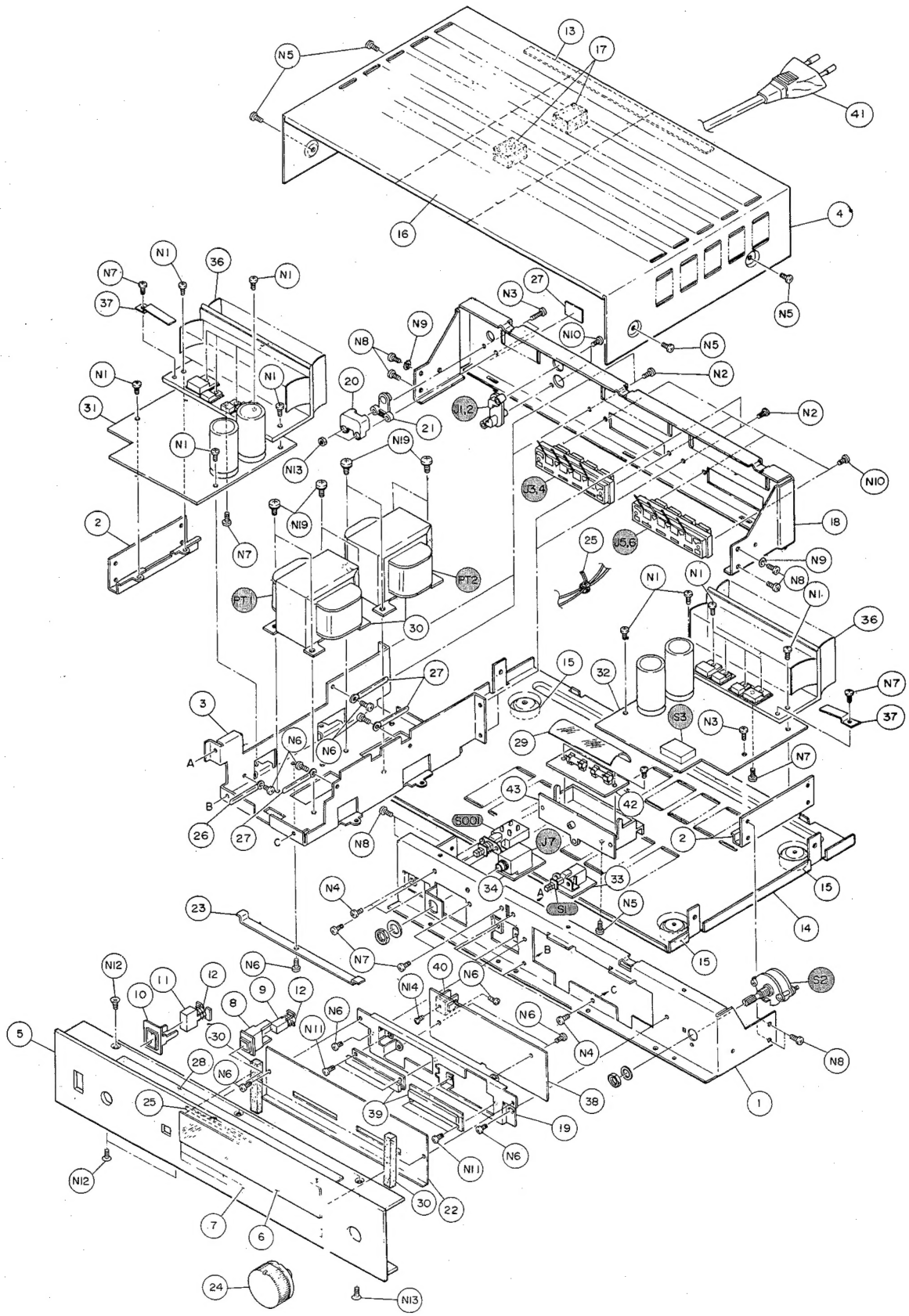


LED BLOCK


Lch
Rch
D711 S4434
D712
D708
D707 1SI555V
D710
D709 1SI555V
IC702 TA7612AP
TR704
TR703 2SC1815
TR709 2SA1015
TR705 2SC1815
TR706
TR701 2SA1015
TR702
SVR701 100K
SVR702
IC701 AN6551
TR707
TR708 2SC1815
TR710 2SD325
D715 RD16E-B2
D716 RD12E-B3
D714 RD27E-B1
D713 RD16E-B2
D701,702,703,704
705,706,707,708
709,710,713,714
715,716
D711 , 712
IC702
IC701
NPN
PNP
(BOTTOM VIEW)
TR710
TR701~709
B C E
E C B
A L
B R
C -B1
D E
E +B1
F +B2

6. EXPLODED VIEW AND PARTS LISTS

EXPLODED VIEW



The parts marked ⬤, see the electrical parts list.

PARTS LIST

ELECTRICAL PARTS

Symbol No.	Part No.	Description
	ICs	
IC701	22114877	IC, AN6551
IC702	40355210	IC, TA7612AP
	TRANSISTORS & DIODES	
TR501, 502	36325846	Transistor, 2SC2240-BL1
TR503, 504	36325846	Transistor, 2SC2240-BL1
or		
TR501, 502	36325847	Transistor, 2SC2240-BL2
TR503, 504	36325847	Transistor, 2SC2240-BL2
or		
TR501, 502	36325848	Transistor, 2SC2240-BL3
TR503, 504	36325848	Transistor, 2SC2240-BL3
TR505, 506	36317480	Transistor, 2SC1815-BL
TR507, 508	36540510	Transistor, 2SA1145-0
TR509, 510	36540510	Transistor, 2SA1145-0
or		
TR507, 508	36540520	Transistor, 2SA1145-Y
TR509, 510	36540520	Transistor, 2SA1145-Y
TR511, 512	36753140	Transistor, 2SC982TM
TR513, 514	36317480	Transistor, 2SC1815-BL
TR515, 516	36334810	Transistor, 2SC2705-0
or		
TR515, 516	36334820	Transistor, 2SC2705-Y
TR517, 518	36339512	Transistor, 2SC2824-0
TR519, 520	36542252	Transistor, 2SA1184-0
TR521, 522	36845859	Transistor, 2SD718-0
TR523, 524	36625360	Transistor, 2SB688-0
or		
TR517, 518	36339522	Transistor, 2SC2824-Y
TR519, 520	36542262	Transistor, 2SA1184-Y
TR521, 522	36845836	Transistor, 2SD718-R
TR523, 524	36625336	Transistor, 2SB688-R
TR601	3653404A	Transistor, 2SA1015-Y
or		
TR601	36534060	Transistor, 2SA1015-GR
TR602	36317480	Transistor, 2SC1815-BL
TR603, 604	36317480	Transistor, 2SC1815-BL
TR701, 702	36534060	Transistor, 2SA1015-GR
TR703, 704	36317480	Transistor, 2SC1815-BL
TR705, 706	36317480	Transistor, 2SC1815-BL
TR707	36317480	Transistor, 2SC1815-BL
TR708	36317480	Transistor, 2SC1815-BL
TR709	36524060	Transistor, 2SA1015-GR
TR710	22114478	Transistor, 2SD325-E
or		
TR710	22114022	Transistor, 2SD325-D

Symbol No.	Part No.	Description
D001	22115564	Diode, S2V10-X
D002	22115564	Diode, S2V10-X
D003	22115564	Diode, S2V10-X
D004	22115564	Diode, S2V10-X
D005	22115564	Diode, S2V10-X
D006	22115564	Diode, S2V10-X
D007	22115564	Diode, S2V10-X
D008	22115564	Diode, S2V10-X
D011	37978380	Diode, 1S5277B
D601	22115415	Diode, 1K426A
D602	22115415	Diode, 1K426A
D603	37978380	Diode, 1S5277B
D701, 702	22115234	Diode, WZ054
D703, 704	37246745	Diode, 1S1555V-TP3
D705, 706	37246745	Diode, 1S1555V-TP3
D707, 708	37246745	Diode, 1S1555V-TP3
D709, 710	37246745	Diode, 1S1555V-TP3
D711, 712	38638470	Diode, S4434
D713	22115450	Diode, RD16E-B2
D714	22115646	Diode, RD27E-B1
D715	22115450	Diode, RD16E-B2
D716	22115538	Diode, RD12E-B3

CAPACITORS

Tolerance: D: ±0.5PF, J: ±5%, K: ±10%, M: ±20%,
P: +100 to −0%, Z: +80 to −20%, G: ±2%
(N): Nonpolarity type

C001	22440324	Electrolytic	6800 mfd/45WV
C002	22440324	Electrolytic	6800 mfd/45WV
C003	22440324	Electrolytic	6800 mfd/45WV
C004	22440324	Electroltyic	6800 mfd/45WV
C005	22342103	Ceramic	0.01 mfd, Z
C006	22342103	Ceramic	0.01 mfd, Z
C007	22342103	Ceramic	0.01 mfd, Z
C008	22342103	Ceramic	0.01 mfd, Z
C009	22303024	Oil-Filled	0.01 mfd/450WV
C501, 502	22361221	Ceramic	220 PF, J
C503, 504	22403080	Electrolytic	4.7 mfd/35WV (N)
C505, 506	22447220	Electrolytic	22 mfd/35WV
C511, 512	22403082	Electrolytic	100 mfd/16WV (N)
C513, 514	22361390	Ceramic	39 PF, J
C515, 516	22361390	Ceramic	39 PF, J
C517, 518	22342473	Ceramic	0.047 mfd, Z
C521, 522	22361101	Ceramic	100 PF, J
C525, 526	22342473	Ceramic	0.047 mfd, Z
C527, 528	22361109	Ceramic	1 PF, D
C601, 602	22403082	Electrolytic	100 mfd/16WV (N)
C603	22443471	Electrolytic	470 mfd/10WV

Symbol No.	Part No.	Description
C604	22447220	Electrolytic 22 mfd/35WV
C701, 702	22448229	Electrolytic 2.2 mfd/50WV
C703	22371223	Mylar 0.022 mfd, J
C704	22371223	Mylar 0.022 mfd, J
C705	22445470	Electrolytic 47 mfd, 16WV
C706	22343472	Ceramic 0.0047 mfd, M
C707	22448109	Electrolytic 1 mfd/50WV
C708	22447100	Electrolytic 10 mfd/35WV
C709	22342223	Ceramic 0.022 mfd, Z
C710	22445470	Electrolytic 47 mfd/16WV
C711	22342223	Ceramic 0.022 mfd, Z

RESISTORS

All fixed resistors are 1/8W, ±5%, carbon resistor unless otherwise noted.
Tolerance: G: ±2%, J: ±5%, K: ±10%

R001, 002	22573472	Metal Oxide 4.7K ohm, 2W
R501, 502	22543474	470K ohm
R503, 504	22543272	2.7K ohm
R505, 506	22543563	56K ohm
R507, 508	22543332	3.3K ohm
R509, 510	22543332	3.3K ohm
R511, 512	22570524	Metal Oxide 2.7K ohm, ¼W, G
R513, 514	22543104	100K ohm
R515, 516	22543104	100K ohm
R517, 518	22543123	12K ohm
R519, 520	22543222	2.2K ohm
R521, 522	22500233	Fusible 100 ohm
R523, 524	22500233	Fusible 100 ohm
R525, 526	22500233	Fusible 100 ohm
R527, 528	22543103	10K ohm
R529, 530	22543822	8.2K ohm
R531, 532	22500233	Fusible 100 ohm, ¼W, J
R533, 534	22500233	Fusible 100 ohm, ¼W, J
R535, 536	22570538	Metal Oxide 56K ohm, ¼W, G
R537, 538	22573100	Metal Oxide 10 ohm, 2W
R539, 540	22571569	Metal Oxide 5.6 ohm, 1W
R541, 542	22573181	Metal Oxide 180 ohm, 2W
R601	22543332	3.3K ohm
R602	22543332	3.3K ohm
R603	22543104	100K ohm
R605	22545680	68 ohm
R611	22571330	Metal Oxide 33 ohm, 1W
R612	22571152	Metal Oxide 1.5K ohm, 1W
R615, 616	22543334	330K ohm
R617, 618	22543333	33K ohm
R621	22571102	Metal Oxide 1K ohm, 1W
R701, 702	22543124	120K ohm
R703, 704	22543123	12K ohm
R705, 706	22543563	56K ohm
R707, 708	22543474	470K ohm
R709, 710	22543224	220K ohm
R711, 712	22543564	560K ohm
R713, 714	22543224	220K ohm
R715	22543123	12K ohm
R716	22543123	12K ohm
R717	22543335	3.3M ohm
R718	22543273	27K ohm
R719, 720	22543123	12K ohm
R721, 722	22547182	1.8K ohm ½W
R723, 724	22547222	2.2K ohm ½W
R725, 726	22543224	220K ohm
R727, 728	22543222	2.2K ohm
R729, 730	22543183	18K ohm
R731	22547151	150 ohm ½W
R732	22543123	12K ohm
R733	22543182	1.8K ohm
R734	22543182	1.8K ohm
R735	22543124	120K ohm
R736	22543124	120K ohm
R737	22543560	56 ohm
R738	22543560	56 ohm
R739	22571271	Metal Oxide 270 ohm, 1W
SVR501,502	22658471	Semi-Fixed 5K ohm
SVR701,702	22658456	Semi-Fixed 100K ohm

MISCELLANEOUS

L501, 502	22211228	Choke Coil, AF
S001	22140626	Push Switch (Power)
S1	22140612	Push Switch (Meter Selector)
S2	22140611	Rotary Switch (Speaker Selector)
S3	22148412	On the Relay
J1, J2	22163765	US2P Jack
J3, J4	22161517	4P Terminal
J5, J6	22161517	4P Terminal
J7	22163746	Jack 6.5ϕ
F001 ∿ 004	22144263	Fuse 3.15A S
F005, 006	22144213	Fuse 1.25A T
	22165047	Fuse Holding Terminal
PT1, 2	22223519	Power Transformer
	22176550	Power Cord
	22148412	Relay with S3

EXPLODED VIEW PARTS

Symbol No.	Part No.	Description
1	20015797	Chassis
2	20735695	Bracket
3	20735708	Power Transformer Bracket
4	20848603	Cabinet
5	20713851	Panel
6	20848602	Indicator Cover
7	20779939	Name Plate
8	20743973	Button Guide
9	20874668	Push Button
10	20743974	Button Guide
11	20874667	Push Button
12	22772611	Spring
13	22756528	Cushion
14	22832826	Bottom Cabinet
15	20842649	Foot
16	22748858	Shield Plate
17	22756983	Cushion
18	20015837	Back Chassis
19	22755586	P.C. Board Holder
20	22754791	Cord Clamper
21	22184183	Cord Clamper
22	20754831	Indicator Plate
23	20754825	Earth Joint
24	20872621	Selector Knob
25	22993614	Band
26	22754981	Clamper Lug
28	22756528	Cushion
29	22748855	Barrier
30	22756958	Cushion
31	22193217	AF P.C. Board (L)
32	22193218	AF P.C. Board (R)
33	22193219	Switch P.C. Board
34	22193160	Headphone P.C. Board
36	22748840	Radiator
37	20746920	Transistor Holder
38	22193247	LED P.C. Board
39	38638470	Diode, S4434
40	22748624	Radiator
41	22176550	Power Cord
42	22193157	Fuse P.C. Board

Symbol No.	Part No.	Description
		SCREWS & RINGS
N1	70433008	Bind Head 3.0 x 8 mm
N2	22701757	Bind Head 3.0 x 6 mm
N3	22701716	Bind Head 3.0 x 14 mm
N4	20795955	Bind Head 3.0 x 6 mm with SW
N5	20795986	Bind Head 3.0 x 8 mm with SW
N6	72633006	Bind Head Tapping 3.0 x 6 mm
N7	72633008	Bind Head Tapping 3.0 x 8 mm
N8	70433006	Bind Head 3.0 x 6 mm
N9	74022030	Lock Washer 3.0ϕ
N10	22701724	Bind Head Tapping 3.0 x10 mm
N11	22701764	Bind Head Tapping 2.3 x 8 mm
N12	70443006	Flat Head 3.0 x 6mm
N13	73653000	Nut 3.0ϕ
N14	70432606	Bind Head 2.6 x 6 mm
N19	22701790	Bind Head Tapping 4.0 x 6 mm
		ACCESSORIES
	22164836	US1P Plug Cord
	22953951	Owner's Manual
	22951862	Warranty Card